Water Conditions Summary

South Florida Water Management District
Governing Board Meeting

September 8, 2011

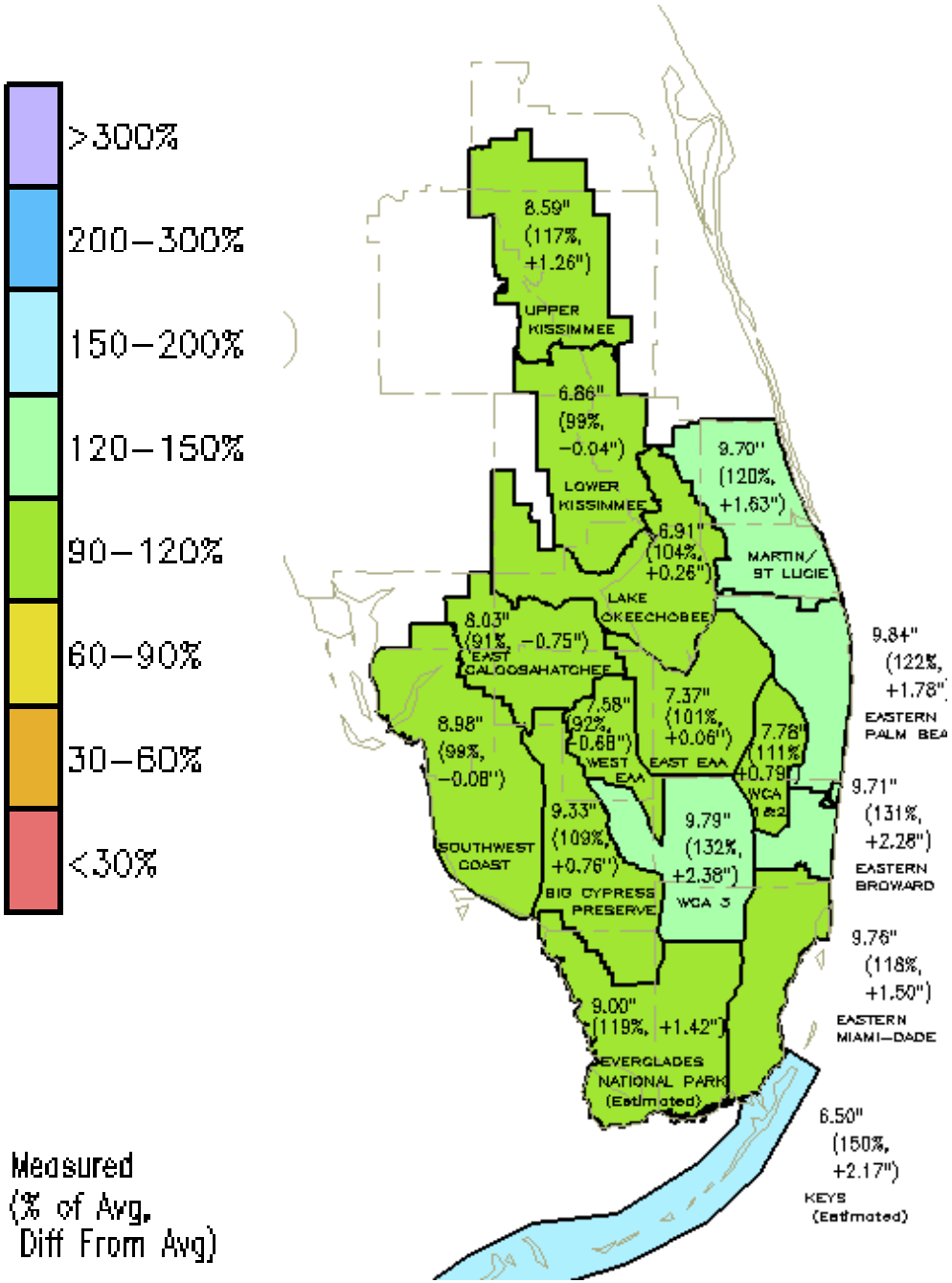
Tommy B. Strowd, P.E., Director
Operations, Maintenance & Construction Division

Storm over the Phase I restoration area floodplain. By: Brent Anderson, Kissimmee Division

SFWMD 2010-11
August Rainfall
Aug1 – 31

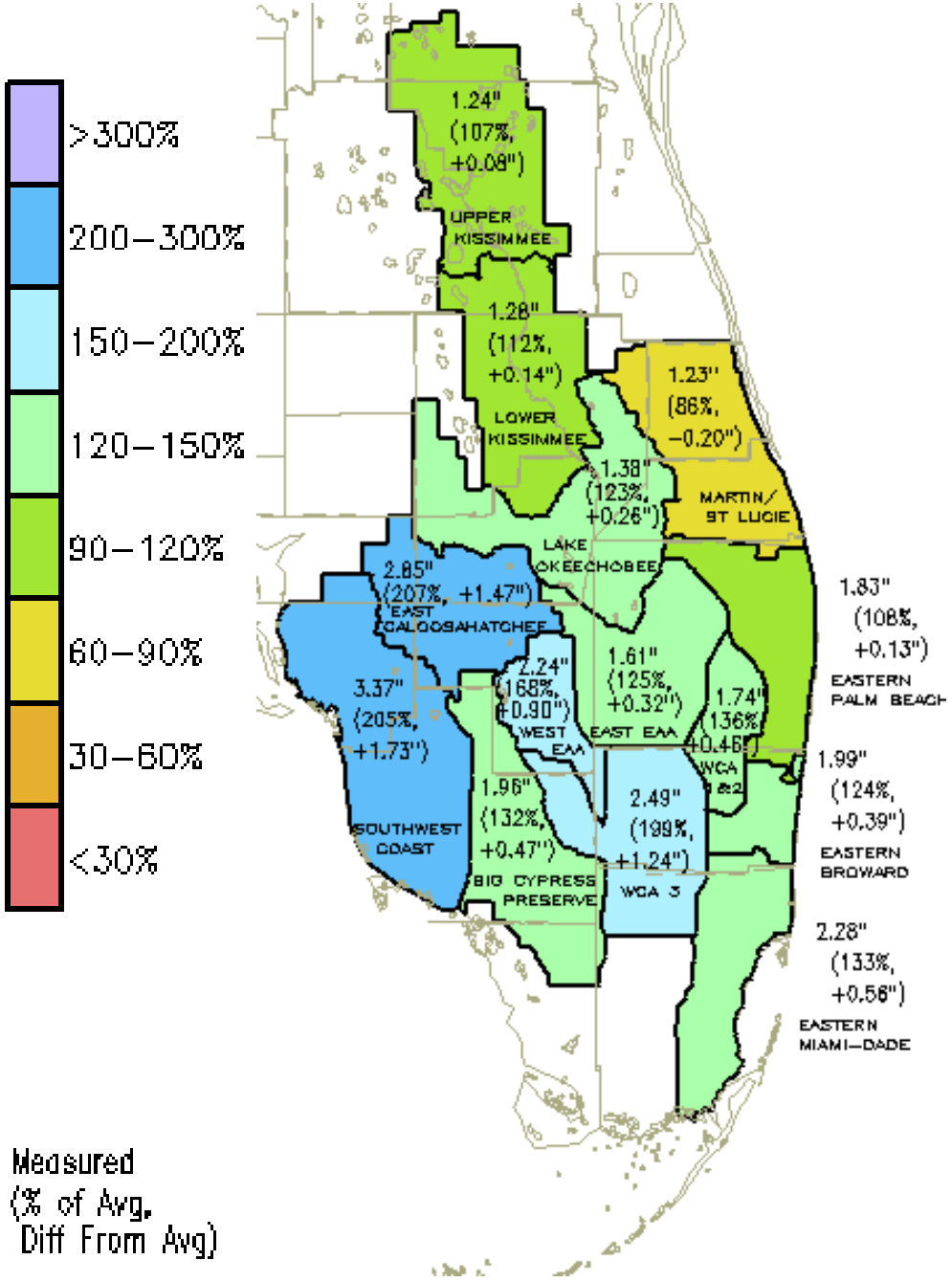
DISTRICT-WIDE: 8.51”
(109% of Avg, or +0.73”)

- August rainfall was ¾ of an inch above average
- Hurricane Irene drew moisture away from Florida and lowered rainfall totals



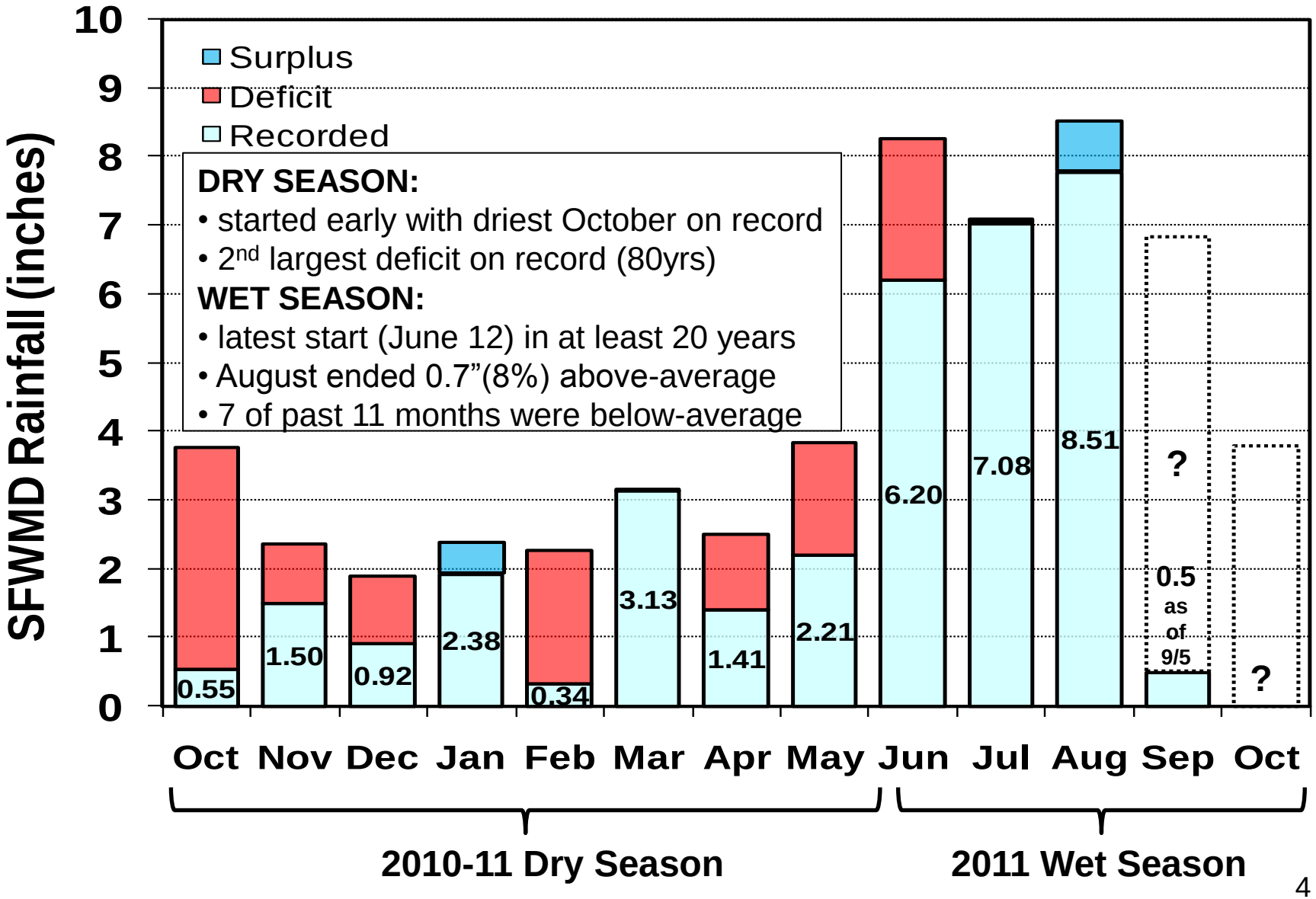
SFWMD 2010-11
Sept Rainfall
Sept 1 – 7

DISTRICT-WIDE: 1.97” (144% of Avg, or +0.60”)



- **Most basins received above-average rainfall for the beginning of September.**
- **WCA-3 received highest amount**
- **T.S. Emily deteriorated prior to reaching S FL**

SFWMD Rainfall Distribution Comparison (Oct 2010 - Aug 2011)



Big Rain Days (BRDs) are important to south Florida's water supply

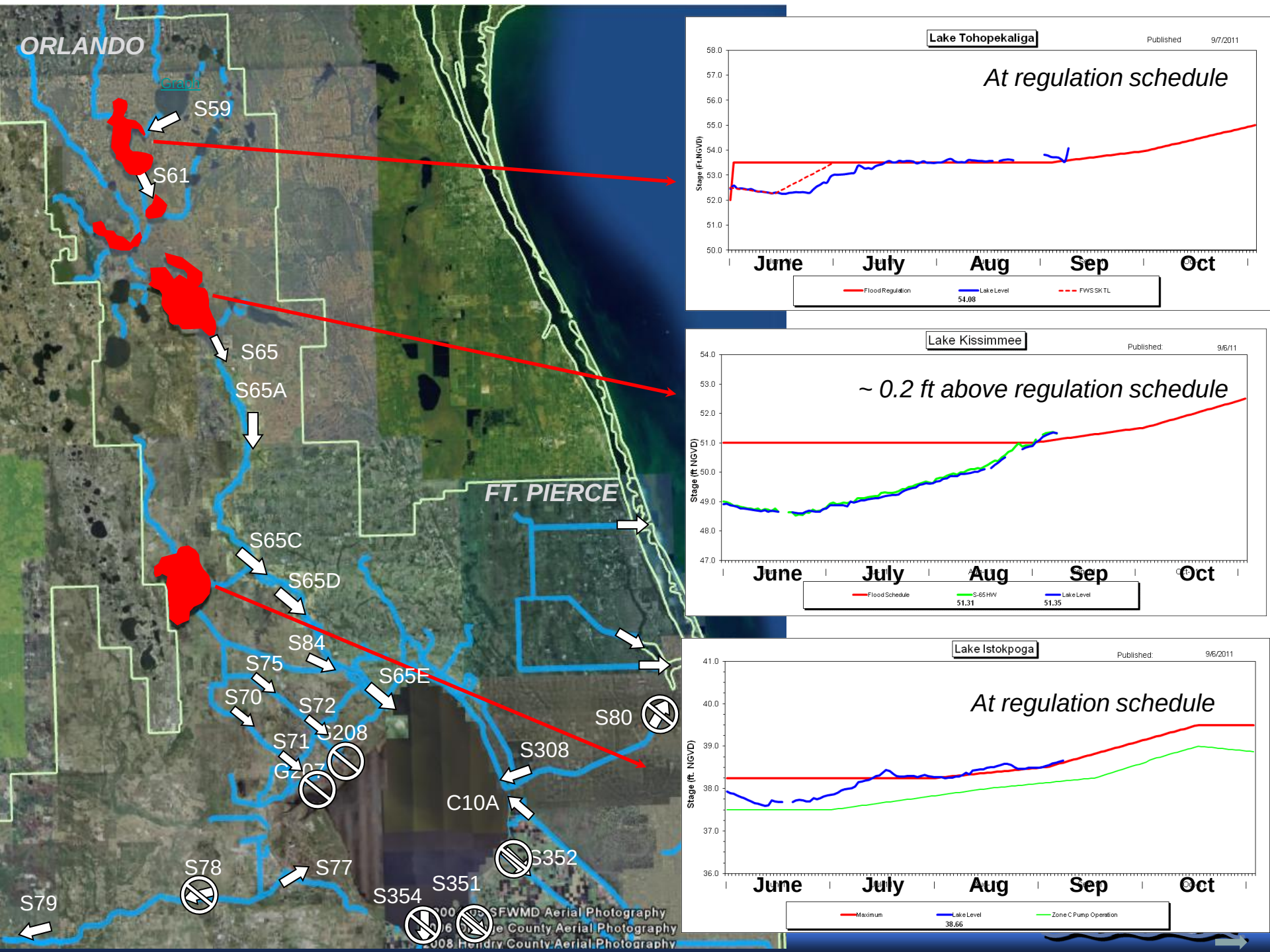
- A Big Rain Day (BRD): average of 1-inch or more over the SFWMD
  - 1-inch or more at a gage is common
  - 1-inch or more average over the entire SFWMD happens about 6 times per year (1993–2010 average)
- 6 BRDs produced almost 9" or one sixth of annual rainfall (17% of annual rainfall in 6 days!)
- About 60% of BRDs occur during the summer and fall, the other 40% during winter and spring
- The driest years averaged about 3 BRDs, and wettest averaged about 8 BRDs. The difference (~7.5") is 15% of annual rainfall
- For 2011:
  - only 2 BRDs so far, and both occurred during the 2010-2011 dry season (typically less runoff during dry season)
  - Need a few more BRD's to avoid another dry year

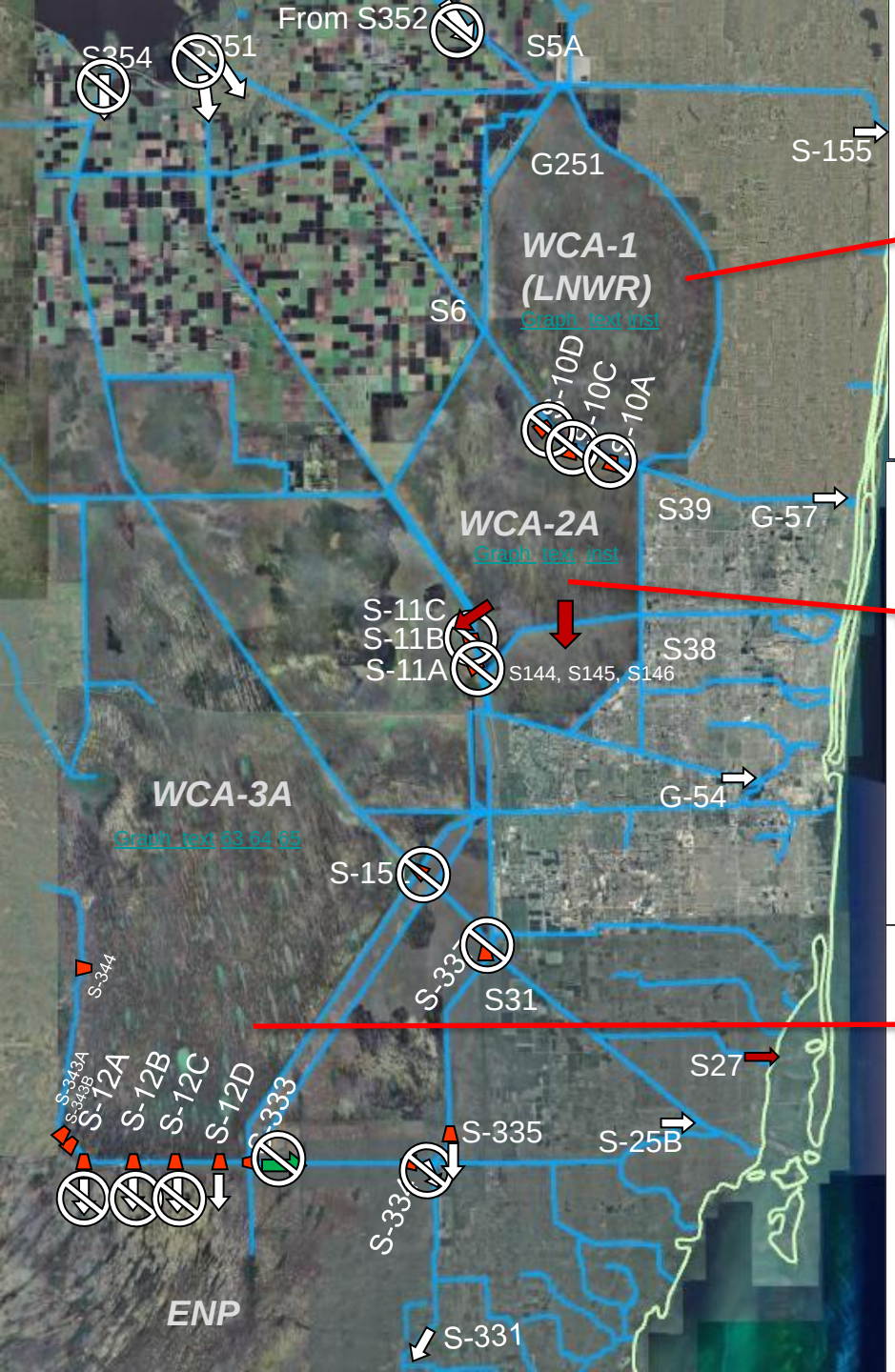
Upper Kissimmmee Basin
Rainfall and Outflows

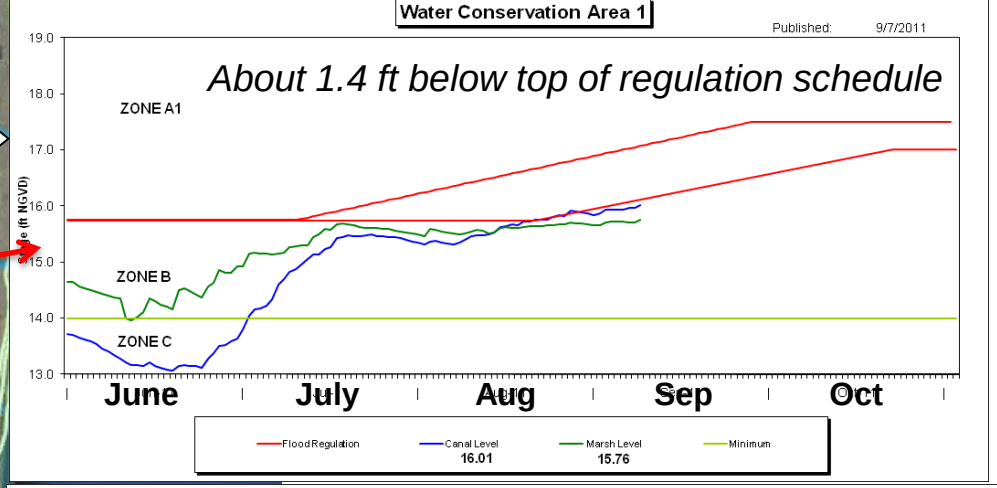
	Rainfall (inches)	(% of avg, diff from avg)	Flow (ac-ft x 1000)	(% of avg, diff from avg)
Oct-10	0.0	(0%, -2.9'')	18	(35%, 34)
Dry Season (Nov 2010 - May 2011)	16.6	(89%, -2.1'')	204	(44%, -264)
2011-to-date	37.8	(108%, +1.9'')	210	(24%, -107*)

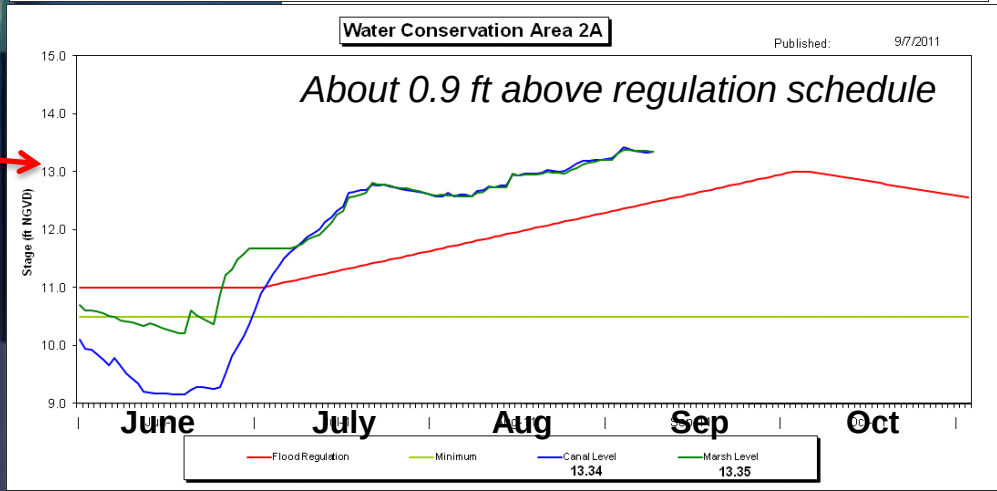
- Sep – Dec 2010 was the 2nd driest (7.22”) in the Upper Kissimmee since 1915
- Considerably less than average outflow from Lake Kissimmee due to dry antecedent conditions

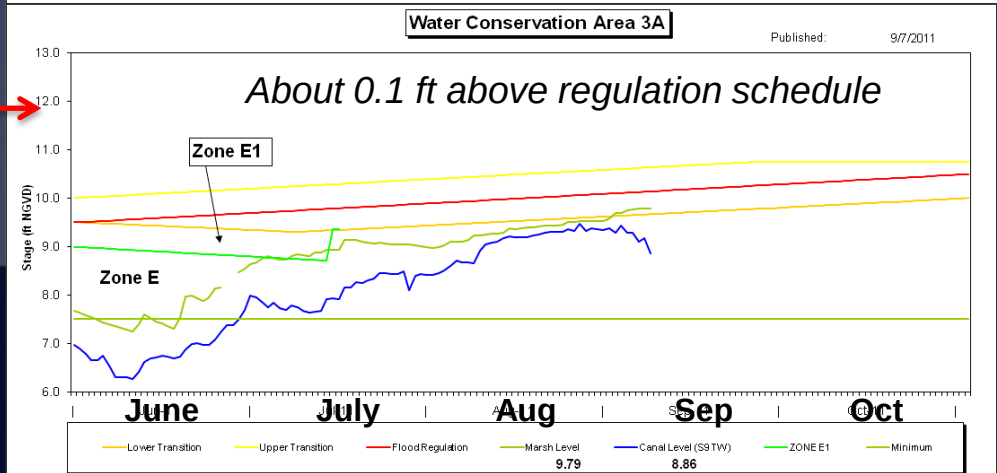
* 107 kaf equivalent to about 4” lower stage in Lake Okeechobee


ORLANDO
Gracie
S59
S61
S65
S65A
FT. PIERCE
S65C
S65D
S84
S75
S70
S72
S65E
S71
S208
S80
S308
C10A
S352
S78
S77
S351
S354
S79
2008 SFWMD Aerial Photography
2008 Hendry County Aerial Photography
Lake Tohopekaliga
Published 9/7/2011
At regulation schedule
Stage (Ft.NGVD)
June
July
Aug
Sep
Oct
Flood Regulation
Lake Level
FWSSKTL
54.08
Lake Kissimmee
Published: 9/6/11
~ 0.2 ft above regulation schedule
Stage (ft NGVD)
Flood Schedule
S-65 HW
Lake Level
51.31
51.35
Lake Istokpoga
Published: 9/6/2011
At regulation schedule
Stage (ft. NGVD)
Maximum
Lake Level
Zone C Pump Operation
38.66


From S352
S354
S351
S5A
S-155
G251
WCA-1
(LNWR)
Graph text inst
S6
S-10D
S-10C
S-10A
S39
G-57
WCA-2A
Graph text inst
S-11C
S-11B
S-11A
S144, S145, S146
S38
G-54
WCA-3A
Graph text 63 64 65
S-15
S-344
S-33
S31
S27
S-343A
S-343B
S-12A
S-12B
S-12C
S-12D
S-333
S-335
S-25B
S-331
ENP


Water Conservation Area 1
Published: 9/7/2011
About 1.4 ft below top of regulation schedule
ZONE A1
ZONE B
ZONE C
Stage (ft NGVD)
19.0
18.0
17.0
16.0
15.0
14.0
13.0
June
July
Aug
Sep
Oct
Flood Regulation
Canal Level
16.01
Marsh Level
15.76
Minimum

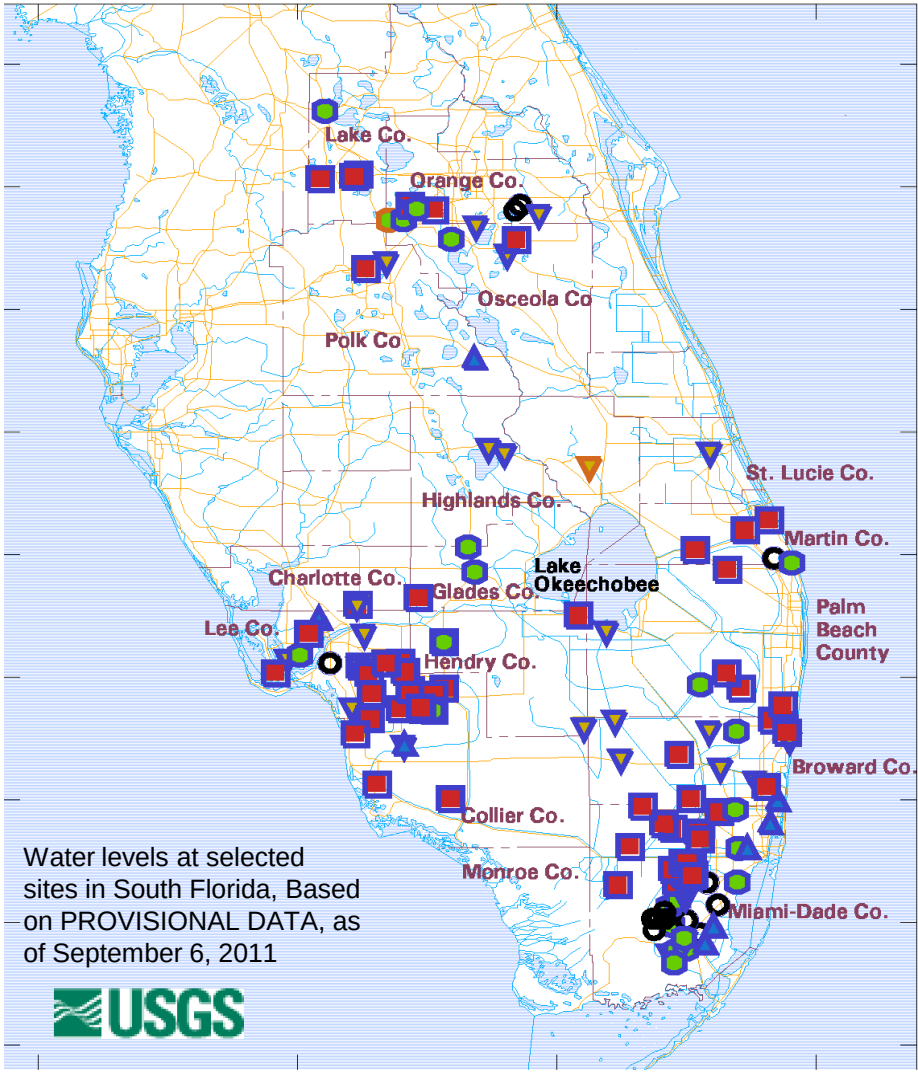

Water Conservation Area 2A
Published: 9/7/2011
About 0.9 ft above regulation schedule
Stage (ft NGVD)
15.0
14.0
13.0
12.0
11.0
10.0
9.0
June
July
Aug
Sep
Oct
Flood Regulation
Minimum
Canal Level
13.34
Marsh Level
13.35


Water Conservation Area 3A
Published: 9/7/2011
About 0.1 ft above regulation schedule
Zone E1
Zone E
Stage (ft NGVD)
13.0
12.0
11.0
10.0
9.0
8.0
7.0
6.0
June
July
Aug
Sep
Oct
Lower Transition
Upper Transition
Flood Regulation
Marsh Level
9.79
Canal Level (S9TW)
8.86
ZONE E1
Minimum

Groundwater Levels Remain low for early September

Lower East Coast
Biscayne Aquifer levels increased during the past week, but about 40% of the inland wells are in their lowest 10th percentile.

Lower West Coast
50% of surficial aquifer levels remain in their lowest 10th percentile
75% of Lower Tamiami Aquifer levels are in their lowest 10th percentile, but improving



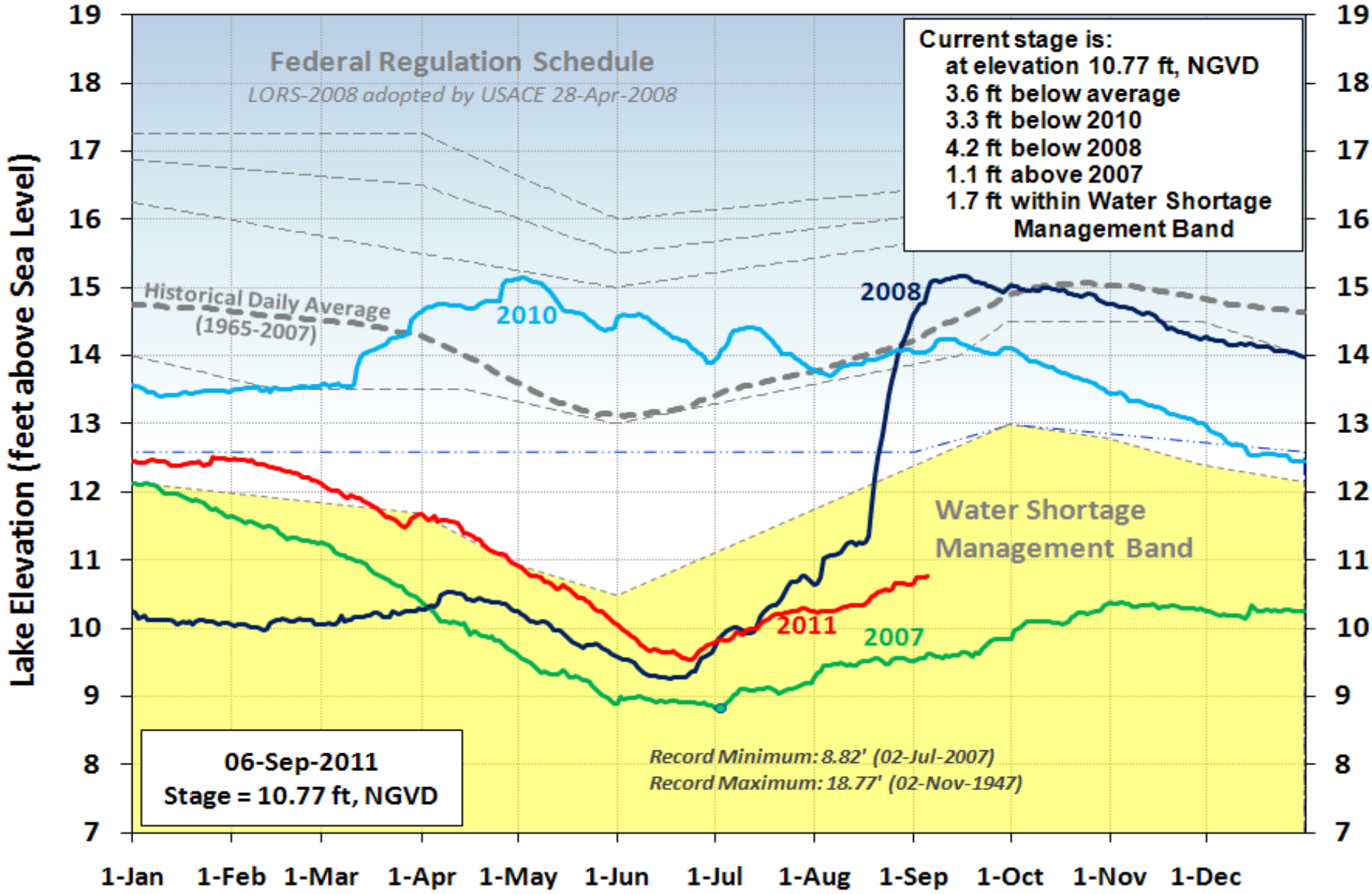
Water level compared to historical data, without trend analysis:

- Insufficient information available to compute water-level statistics
- In lowest 10 percent of past water elevations
- Within lowest 10 to 30 percent of past water elevations
- Within 20 percent of the median of past water elevations
- Within highest 10 to 30 percent of past water elevations
- In highest 10 percent of past water elevations

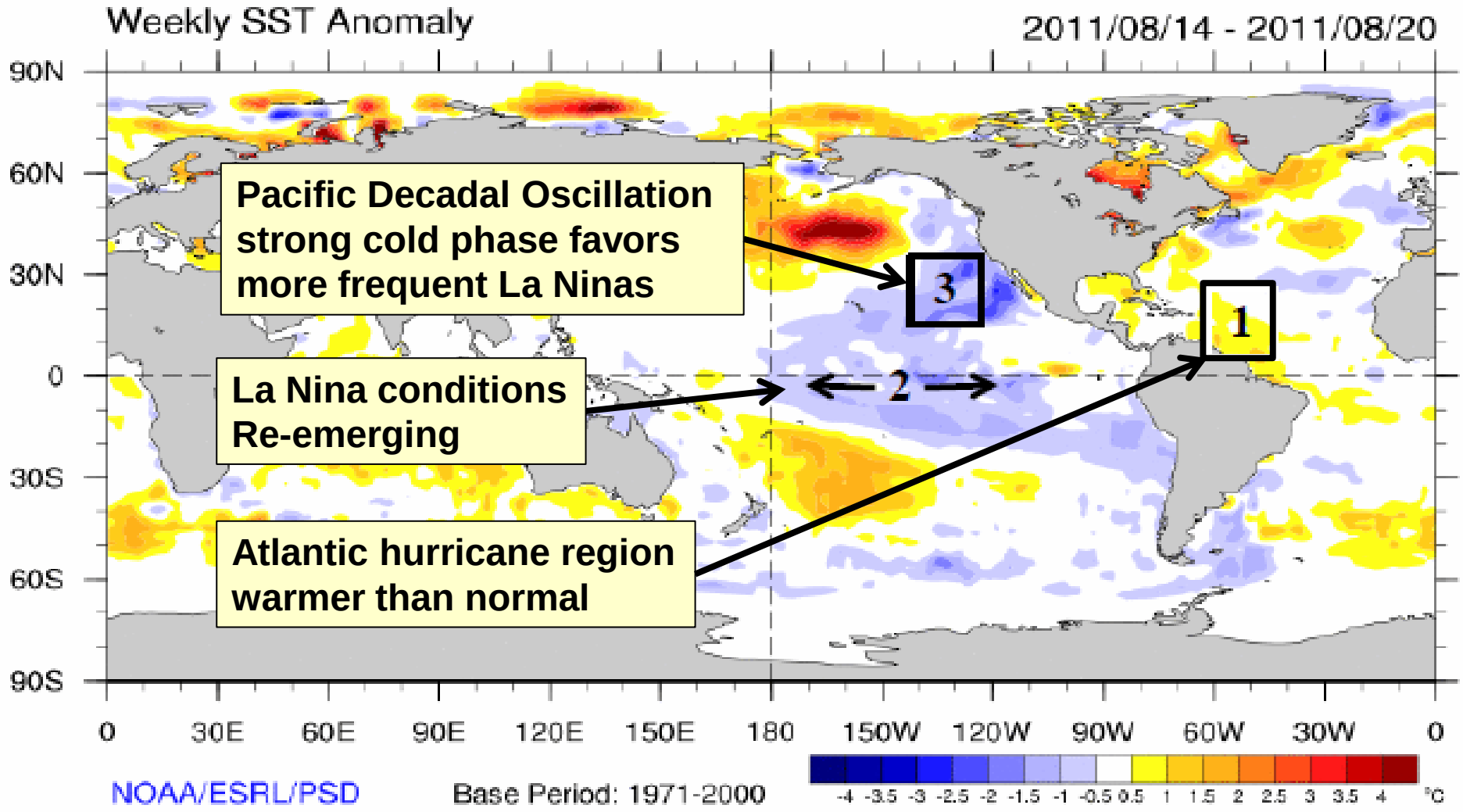
STA-3/4 Diversion Operations

- Early July rains produced large inflows and rapid increases in STA-3/4 stages after extended dry conditions
- Created unfavorable conditions for re-establishment of new emergent vegetation and the continued survival of remaining submerged aquatic vegetation (SAV)
- SFWMD scientists recommended reducing inflows and holding very low stages to allow SAV chance to recover
- G-371 and G-373 diversion structures were used to facilitate reduced inflows to STA-3/4to prevent overloading of STA-3/4
- District staff has determined that the vegetation has recovered sufficiently and therefore diversion operations have been terminated.

Lake Okeechobee Water Level Comparison



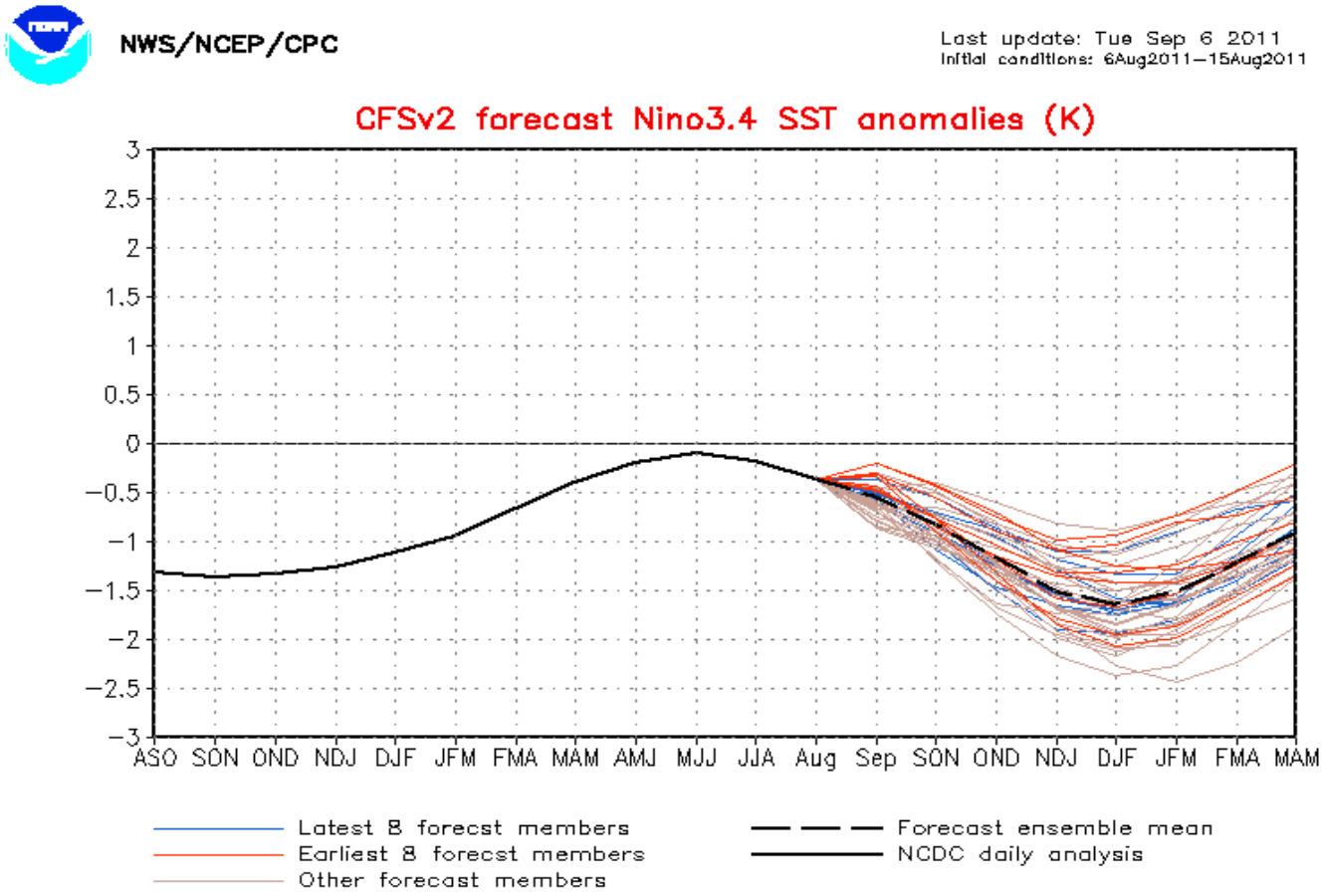
NOAA Weekly Sea Surface Temperature Anomaly



La Nina Watch Issued by CPC

- The latest runs from the NCEP Climate Forecast System (CFS) models predict La Niña to re-develop during the fall.
  - This forecast is also supported by…
    - the ongoing La Niña-like tropical atmosphere,
    - subsurface temperature trends, and
    - the historical tendency for significant wintertime La Niña episodes to be followed by relatively weaker La Niña episodes the following winter.
- Therefore, ENSO-neutral is expected to continue into the Northern Hemisphere fall 2011, with ENSO-neutral or La Niña equally likely thereafter.

NCEP Climate Forecast System

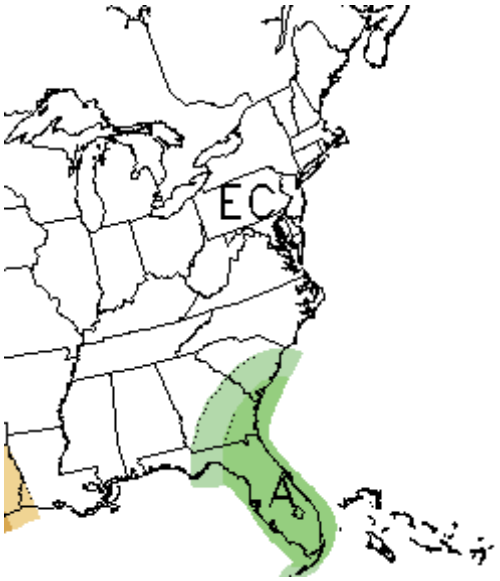


Forecasts of sea surface temperature (SST) anomalies for the Niño 3.4 region (5°N-5°S. 120°W-170°W From version 2 of the NECP Climate Forecast System. Figure updated Sep. 6, 2011.

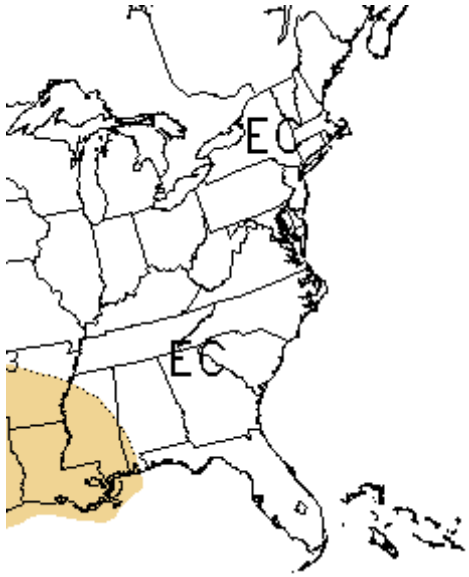
U. S. Seasonal Precipitation Outlook

National Climate Prediction Center (CPC)

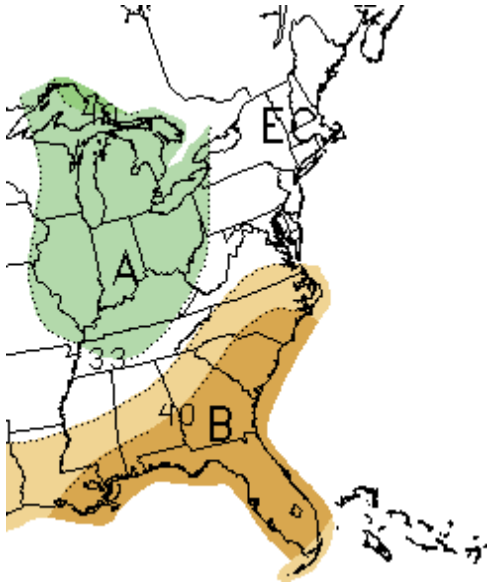
Sep 2011



Oct-Dec 2011



Jan-Mar 2011

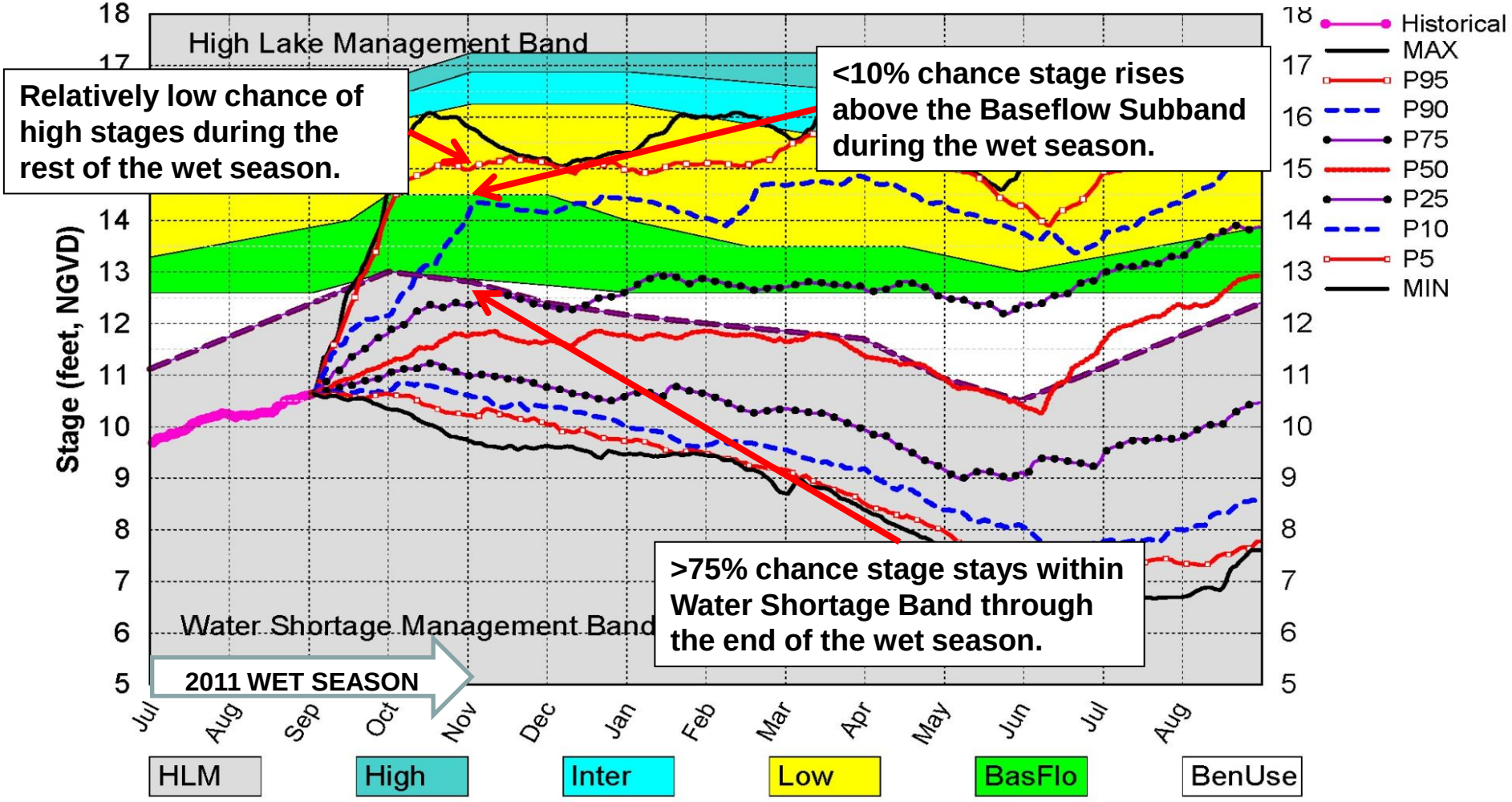


The current precipitation outlook for central and southern Florida is:

- September: increased chances of above-normal (A) rainfall
- Sep-Nov: equal chance (EC) of being above, normal, or below
- Jan-Mar: increased chances of below-normal (B) rainfall

Lake Okeechobee SFWMM September 2011 Position Analysis

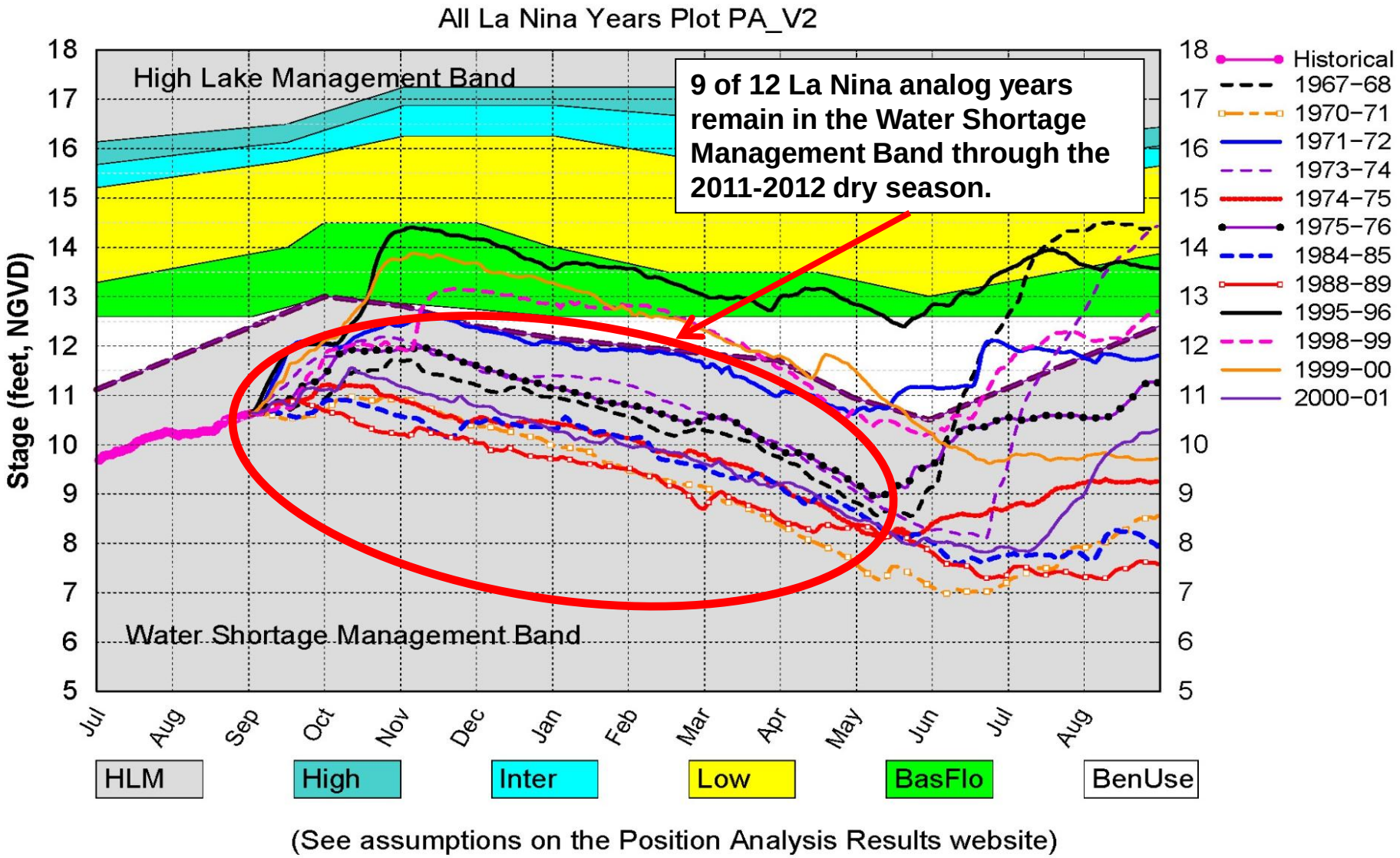
Percentiles based on 41 possible outcomes starting with 1-September initialization



(See assumptions on the Position Analysis Results website)

Tue Sep 6 10:50:50 2011

Lake Okeechobee SFWMM September 2011 Position Analysis



(See assumptions on the Position Analysis Results website)

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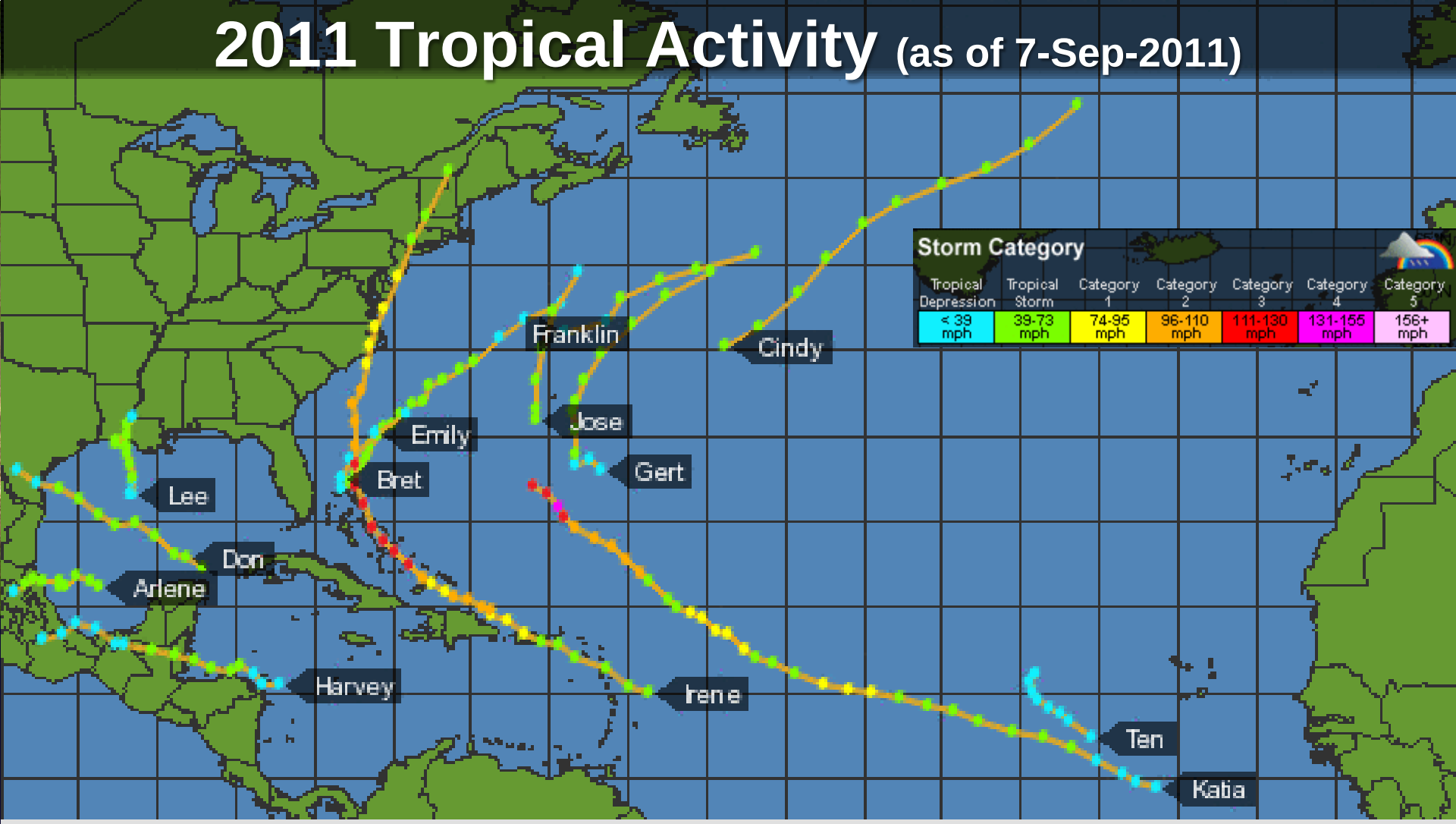
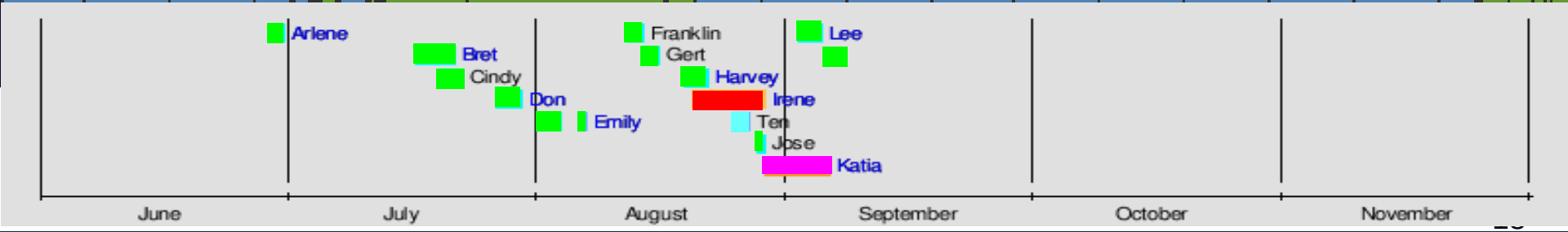
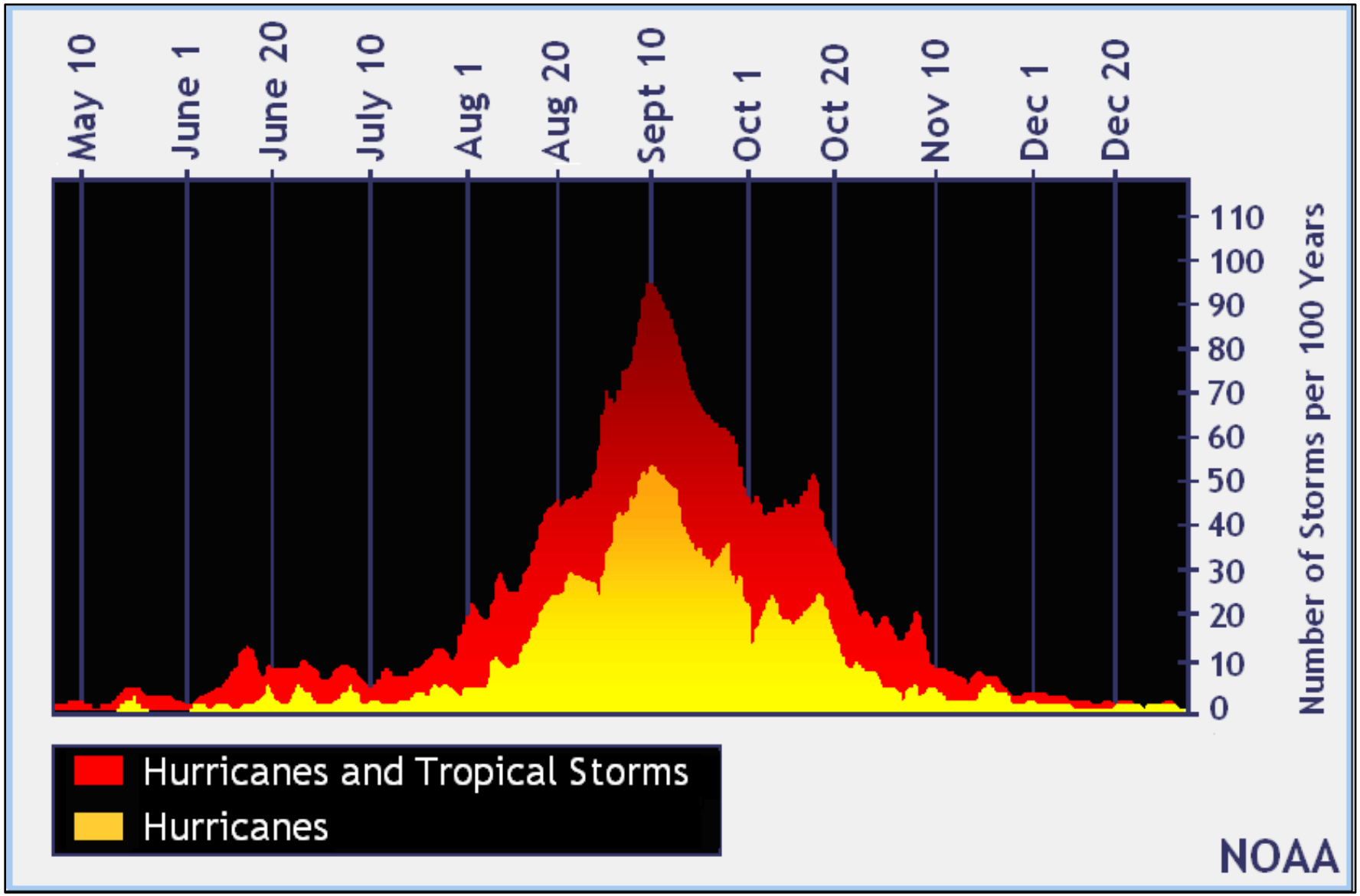
2011 Tropical Activity (as of 7-Sep-2011)






May 10
June 1
June 20
July 10
Aug 1
Aug 20
Sept 10
Oct 1
Oct 20
Nov 10
Dec 1
Dec 20
110
100
90
80
70
60
50
40
30
20
10
0
Number of Storms per 100 Years
Hurricanes and Tropical Storms
Hurricanes
NOAA

Questions??